



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/542,228	11/02/2005	Heinz-Peter Rink	PAT-01096	3088
77234	7590	02/18/2009		
Mary E. Golota Cantor Colburn LLP 201 W. Big Beaver Road Suite 1101 Troy, MI 48084			EXAMINER MESH, GENNADIY	
			ART UNIT 1796	PAPER NUMBER
			NOTIFICATION DATE 02/18/2009	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

MARJORIE.ELLIS@BASF.COM
Mgolota@CantorColburn.com
usptopatmail@cantorcolburn.com

Office Action Summary

Application No.

10/542,228

Applicant(s)

RINK ET AL.

Examiner

GENNADIY MESH

Art Unit

1796

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 November 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 7-26 is/are pending in the application.
- 4a) Of the above claim(s) 7-16, 19, 20, 23 and 24 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 17, 18, 21, 22, 25 and 26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of specific catalyst species as lipases claimed by Claims 22, 25 and 26 in the reply filed on 11/24/2008 is acknowledged. The traversal is on the ground(s) that searching all species of enzyme catalyst will not place a serious burden on the Examiner. This is not found persuasive because Election /Restriction in this case is based on **Lack of Unity** as stated in the Office action mailed October 22,2008 and, under the standards applicable in Lack of Unity, the issue of serious burden plays no role.

The requirement is still deemed proper and is therefore made FINAL.

Therefore, Claims 23 and 24 are withdrawn. Claims 17-18, 21-22 and 25-26 will be examined on the merits.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 17-18, 21-22 and 25-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weikard et al.(US 6,150,458) in view of Kobayashi et al." Enzymatic Polymerization".

Regarding Claims 17 and 18 Weikard discloses process for preparation of (meth)acrylic acid ester by reacting hydroxyl group containing polyester with

(meth)acrylic acid in the presence of esterefication catalyst (see abstract) and pointing out that polymers obtained by the process can used as radiation curable binders (see column 4,lines 11-14).

Weikard is silent regarding conducting this process with specific catalyst as enzyme.

However, Kobayashi teach that process of polymer modification, wherein terminal hydroxyl group of polyester can react with carboxylic acid could be catalyzed by lipase (enzyme) catalyst in order to give end-functionalized polyester - (see page 3813, paragraph 4 Polymer Modification) and pointing out that enzymatic polymerization can be conducted under mild conditions without using toxic reagents by natural catalyst with "green" appeal in commercial benefit and ecological requirement - see page 3793, right column third paragraph.

Therefore, it would be obvious to one of ordinary of skill use lipase(enzyme) catalyst per teaching of Kobayashi in order to obtain modifies polyester by process of Weikard "under mild conditions without using toxic reagents by natural catalyst with "green" appeal in commercial benefit and ecological requirement".

Regarding limitation of Claim 18: Kobayashi teach (see page 3811, paragraph 2- Polymerization of Diacid and Glycols), that :

"biotransformation of various combinations of dicarboxylic acid derivatives and glycols to bio-degradable polyesters have been reported. Dicarboxylic acids as well as its derivatives, activated and nonactivated esters, cyclic acid anhydride, and poly-anhydrides, were found to be employed as useful monomers for the enzymatic

synthesis of polyesters under mild reaction conditions. Many dicarboxylic acids and their alkyl esters are commercially available; however, they often showed **low reactivity toward lipase catalyst**. Thus, development of the reaction apparatus and **reaction conditions** has been made for efficient production of higher molecular weight polyesters. ... a horizontal two chamber reactor was employed to remove the **leaving water molecules with molecular sieves.**"

Therefore, it would be obvious to remove water from reaction mixture as it claimed in Claim 18.

Regarding Claim 21 Kobayashi teach that quantity of enzyme catalyst depending on activity of specific enzyme and relatively large quantity up to 40 wt% could be used if it required for efficient production of the polymer (see top of page 3808).

Therefore, one of ordinary skill in the art would be motivated to use significant amount of enzyme catalyst in order to develop efficient production process using specific enzyme catalyst.

Regarding Claims 22 and 25-26 Kobayashi teach, that Lipases, is an enzyme which catalyses the hydrolysis of fatty acid esters in living system (therefore lipases belongs to hydrolases) can be used as a catalyst for esterification and transesterification (see last paragraph on pages 3806 and first paragraph on page 3807) and further teach, that specific Lipases as Candida (lipases CA) and Murcor (lipases MM - see page 3810, right column) can catalyzed polymerization of diacids and glycols.

Response to Arguments

3. Applicant's arguments filed on 09/08/2008 have been fully considered but they are not persuasive.

Applicant's arguments related to Claims 17-18, 21-22 and 25-26 rejected under 35 U.S.C. 103(a) as being unpatentable over Weikard in view of Kobayashi based on statement that "combined references of Weikard and Kobayashi fail to suggest a polyester having at least one pendant or terminal group which can be activated with actinic radiation."

This argument was found unpersuasive, because as it was shown in rejection (see paragraph 2 above) Weikard discloses process for preparation of (meth)acrylic acid ester by reacting hydroxyl group containing polyester with (meth)acrylic acid in the presence of esterefication catalyst (see abstract) and pointing out that polymers obtained by the process can be used as **radiation curable binders**.

Therefore, Weikard not only discloses same polymers, having same pendant groups what can be activated by actinic radiation, used as a binders, and can cured or crosslinked by actinic radiation.

Regarding Applicant's argument one would not be motivated to combine Weikard and Kobayashi note, that as it was stated in rejection above - see paragraph 2, one of ordinary of skill would use lipase(enzyme) catalyst per teaching of Kobayashi in order to obtain modifies polyester by process of Weikard "under mild conditions without using toxic reagents by natural catalyst with "green" appeal in commercial benefit and ecological requirement .

Therefore, applicant's arguments were found unpersuasive.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GENNADIY MESH whose telephone number is (571)272-2901. The examiner can normally be reached on 10 a.m - 6 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (571) 272 1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Gennadiy Mesh
Examiner
Art Unit 1796

/GM/

/Vasu Jagannathan/
Supervisory Patent Examiner, Art Unit 1796